

through mountainous ranges ; with a legend from the Scripture, "Every mountain shall be made low."

The medal was struck by order of the Director of the Mint, Gov. Pollock, and the dies were made by Mr. Barber.

The opportunity is also taken to show a head of Rittenhouse, in wax, executed by the same artist, from the bust in the Society's hall. It is intended to form the obverse of a medal, by reduction on the engraving machine already spoken of.

Prof. Hayden explained the character of the MSS. Journal of his recent explorations in the Rocky Mountains.

The Annual Report of the Treasurer was read.

The Annual Statement of the Trustees of the Building Fund was read, and the Society was adjourned.

Stated Meeting, Dec. 17th, 1869.

Present, fourteen members.

DR. WOOD, President, in the Chair.

Letters were read from Mr. H. A. Homes, of Albany, State Librarian, from the Natural History Society at Newcastle upon Tyne, and from Dr. F. V. Hayden, withdrawing his paper, on account of its ensuing publication by the Department of the Interior at Washington.

Donations for the Library were received from the London Geological Society, the Boston N. H. Society, Mr. Homes of the N. Y. State Library, the College of Pharmacy, Mr. David Paul Brown, Mr. Hector Orr, Gen. A. A. Humphreys and the Department of the Interior.

A letter was read from the Chairman of the Publication Committee, Mr. James, relative to the publication of Dr. Dewey's Report on Carices. On motion of Mr. Fraley, the papers were recommitted to the original Committee, Mr. Durand, Mr. James and Dr. Ruschenberger.

A communication was made by Mr. P. W. Sheafer of the following records of well borings in the Wilksbarre coal region :

From P. W. Sheafer's Note Book, Engineer of Mines, Pottsville, Pa.
Oxford Shaft near Hyde Park, Luzerne county, Pa.

180 ft. deep to the Diamond coal, which is about 7' thick.

At 33 ft. cut a 5' coal through a gangway on which the shaft water is sent to surface; at 65 ft. cut a 6' Coal.

Further down the Lackawanna is the crop of the 14 ft. Coal, which lies below the Diamond about 80 ft. A small Coal bed divided by a seam of rock lies between.

Audenried Shaft, near Wilkesbarre. From manuscript of Supt. Kendrick, April 5, 1862.

	Surface.
16'	Sand and Loam.
56 = 40'	Sand Stone Rock.
70 = 14'	Slate.
80 = 10'	Coal.
120 = 40'	Slate.
120½ = ½'	Coal.
160½ = 40'	Slate.
166½ = 6'	Coal.
176½ = 10'	Fire Clay.
226½ = 50'	Slate.
228 = 1½'	Coal.
238 = 10'	Fire Clay.
259 = 21'	Mixed Sand Stone.
264 = 5'	Slate.
269 = 5'	Coal.
296 = 27'	Fire Clay and Slate.
328 = 32'	Mixed Sand Stone.
335 = 7'	Coal.
338 = 3'	Fire Clay.
395 = 57'	Black Rock.
400 = 5'	Coal.
415 = 15'	Mixed Sand Stone.

Empire Shaft near Wilkesbarre, April 5, 1862, from Surveyor Allerbach's notes, who got it from Broderich, Supt.

From Surface to bottom of	10'	Vein Coal is	80'
"	"	7½'	" 134'
"	"	5'	" 220'
"	"	14'	" 300½'

April 5, 1862. Copy of *Dundee Shaft*, near Monticoke, Wyoming Valley, from Section in Lentz & Co.'s Office, by P. W. Sheafer, E. M., from F. Koerner. Dip 4° S. E.

28'	Surface.
2' 6''	Coal.
9' 6''	—————
6'	Fire Clay.
21'	Sand Stone.

10'		Fire Clay.
13'		Sand Stone and Slate mixed.
6'		Slate.
	6''	Coal.
3'		Slate.
2'	6''	Coal.
10'		Slate.
	6''	Coal.
16'		Slate.
	4''	Coal.
	6''	Slate.
7'		Sand Stone.
6'		Fire Clay.
4'		Slate and Sand Stone.
5'		Slate.
4'		Sand Stone and Slate.
8'		Fire Clay.
10'		Slate and Fire Clay.
6'		Sand Stone.
2'		Fire Clay.
12'		Slate and Sand Stone.
11'		Slate, pump.
2'	6''	Coal.
14'		Slate.
15'		Sand Stone.
17'	6''	Fire Clay and Slate.
23'	6''	Sand Stone.
	10''	Coal.
	5''	Slate and Coal.
33'	6''	Slate.
318'	2'	0'' Coal. <i>Fossil Shells.</i> No Vegetable impr.
	5'	Sand Stone.
16'		Slate, Fire Clay, Benches of S. Stone.
	5'	0'' Sand Stone.
	6'	Soft Fire Clay.
	5'	6'' Hard Fire Clay.
	32'	6'' Sand Stone.
	1'	6'' Coal.
	4'	Slate.
	15'	Dark colored Sand Stone.
	20'	Shells. Sand Stone.
	12'	Slate.
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440'	08''	

This shaft was continued to a depth of 700 feet. Its remarkable scientific feature is the fossil shells at a depth of 318 feet.

A communication from Dr. R. J. Roscoe, of Carlisle, Schoharie county, N. Y., to the Librarian, relative to certain supposed fossils of high grade and great size found in the Laurentian rocks of Essex county, New York, fragments of which were brought by Dr. Le Conte, and deposited in the Museum of the Academy of Natural Sciences, in Broad street, was read and commented upon by the Librarian, who explained that they were plications of alternate layers of metamorphosed limestone and sandstone deposits; and that Dr. Leidy had described similar, but much larger ones (one weighing perhaps 20 tons), in the marble quarries near Attleborough, Penn., in a subsilurian group of perhaps the same age. The sheets of graphite covering the plicated layers prove, no doubt, the organic origin of the calc-spar layers; but the present form of the mass ought not to be taken as the original form of the animal organism.

Dr. Geo. B. Wood communicated his experiments and views on the revival of peach and other fruit trees, by the application of potash to their roots. A discussion followed, in which Dr. Coates, Dr. Emerson, Prof. Trego, Judge Lowrie and Gen. Tyndale joined.

Dr. G. B. Wood described a discovery which he believes that he has made, and which, if verified by further experiments, will be of great value to the agricultural interests of the country. Potash, combined with one or more of the vegetable acids, is an essential ingredient in vegetables, particularly in fruit, which, it is probable, cannot be produced without it. Sometimes fruit-trees cease to bear, prematurely; and, in relation to peach trees, it is well-known that, in this vicinity, after producing a few crops, they not only cease bearing, but perish themselves in a short time; whereas their natural life is 50 or 60 years or more. The fact seems to be that potash is wanting in the soil in sufficient abundance to allow the tree to continue to bear fruit continuously. Dr. Wood believes that by supplying potash to the tree, so that it shall reach the radicals, and be absorbed, the deficiency may be supplied; the fruit-bearing power is restored, and the tree itself, if prematurely perishing, revived. He was led to this conclusion in the following way: Having a considerable number of peach trees, which had entirely ceased to bear fruit, and were themselves obviously decaying, and believing, with most persons, that the cause lay in the worms at the root of the tree, he put in operation a plan which he had seen his father perform, more than fifty years since, of digging around the base of the stem a hole four or five inches deep, scraping away all the worms that could be found burrowing at the junction of the stem and root, and filling the hollow thus made with fresh wood-ashes, recently

from the fire, and of course retaining all their potash. The ashes were used with the view of destroying the worms that might have escaped notice. This was done in the autumn of 1863. In the following spring he was himself astonished at the result. The trees appeared to have been restored to all their early freshness and vigor. They put forth bright green leaves, blossomed copiously, and bore a crop of fruit such as they had never borne before; many of the branches breaking down under their load of peaches. In reflecting on these results, Dr. Wood came to the conclusion that all this change could not possibly have been produced by the destruction of a few worms; and, besides, there were several of the peach trees treated, in which no worms could be found. He was thus led to the belief that the real cause of the revival of the trees was the ashes, the potash of which, being dissolved by the rains, had descended along the roots to their rootlets, and presented to them the very food for want of which the trees were dying. He has, accordingly, had hundreds of various kinds of failing fruit trees treated in this way this fall, in the expectation of an abundant harvest next year. Should he live till then, he will inform the Society of the result. Should he not live, the experiment will at least have been put on record.

In answer to an inquiry, Dr. Wood said that the soil was of all kinds, sand, loam, and clay.

Dr. Coates remarked that trees at first grow slowly, and have but little chance to get potash from the limited area which they occupy. For instance, around the body of large trees there are seldom other growths.

Dr. Emerson gave his experience of peach growing. The peach, brought from Persia, loves a mild climate, and suffers when brought North, unless protected. When first brought to this country it grew luxuriantly, in all parts, well. Of late years, however, owing to the clearing away of the forest, which afforded it the same kind of protection which, in Northern Europe, was given it by glass, it has become limited to the soft climate of the peninsula between the Delaware and Chesapeake Bays, where it has no disease and bears abundantly. The "Yellows," however, although looked upon as a disease spreading from tree to tree, is in fact produced by colonies of a parasite, which propagates under favor of a low constitutional condition of the tree, produced by the failure of the necessary climatic protection. As to the nourishment of the tree, salts, especially of potash, are very nutritive. But there is another element in wood ash, phosphorus, which is the prime mover of all vegetable life. Dr. Emerson described one of his unpublished experiments, with a peach orchard, which yielded inferior fruit, but only as to *color*; otherwise the fruit was as good as others. He gave a top dressing of 200 or 300 lbs. of superphosphate to the acre, and the next year his peaches brought 10 or 20 cents more in the market. At a certain exhibition, some pears of a very high color were displayed, which brought a very high price. Their rearer had used dog dung in quantities, which lent additional force to Dr. Emerson's belief that phosphoric acid heightened the color of his peaches.

Dr. Wood repeated that his experiment bore especially upon the mode

of application of the potash. The spreading of potash over the surface of the land produced no great result. But, when placed where the rain water could carry it along the descending roots down to the rootlets, it is immediately absorbed by the plant, and produces its effects.

Judge Lowrie said that he bought, in 1838, a wild place near Pittsburgh. It was covered with forest trees and underbrush. He cleared away the undergrowth and weeds. Within three years he discovered that all the walnut and hickory trees were beginning to die, although in rich soil, and 4 or 5 feet in diameter, and some of them one hundred feet high. In the course of two years none were left. The oaks, maples, lindens and elms were not affected.

Prof. Trego said that in Bucks county, black walnut trees, planted along the fences, grow and flourish well, and are not hurt by standing quite alone as shade trees. He had placed wood ashes around the foot of a fine pear tree, banking it up around the tree, but it had no effect. Peach trees have many roots running horizontally, and the rootlets are near the soil. To this Dr. Wood replied that, according to his observations, they descend into the ground obliquely.

General Tyndale said that the finest peach grounds in the United States are the highlands of Southeastern Tennessee; the tops of mountain spurs of the Cumberland plateau, around Chattanooga, above the conglomerates of the Coal Measures and the cavernous limestones of the sub-carboniferous, two thousand feet or more above sea-level, and many hundred miles in the interior of the country.

The stated business of the meeting being in order, the Report of the Financial Committee was read, and, on motion, the appropriations, recommended therein for the ensuing year, were passed, as follows :

Salary of Librarian.....	\$700 00
Salary of Assistant to Librarian.....	360 00
Salary of Janitor.....	100 00
Binding Books.....	150 00
Subscription to Journals.....	50 00
Petty expenses of Librarian.....	100 00
Hall account.....	200 00
Insurance account.....	160 00
Publication, in addition to the interest of the publication fund.	2,000 00
General expenses, other than the above, and including the commissions of the Treasurer.....	750 00
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	\$4,570 00

Pending nominations, Nos. 643 to 648 were read.

Mr. Fraley moved that the subject of cleaning and varnishing the portraits of the Presidents of the Society, be referred to the Committee on the Hall, with power to act.

And the Society was adjourned.